Permit Fact Sheet

General Information

Permit Number:	WI-0024139-10-1 *Modification	
Permittee Name:	VILLAGE OF GRATIOT	
Address:	P O Box 189 5840 Main Street	
City/State/Zip:	Gratiot WI 53541-0189	
Discharge Location:	East of the WWTF, NW ¼ of NE ¼, Section 9, T1N, R4E. Lat: 43.25512º N / Lon: 89.68092º W	
Receiving Water:	Wolf Creek (Lower Pecatonica River Watershed, SP07 – Sugar-Pecatonica River Basin) in Lafayette County	
Stream Flow ($Q_{7,10}$):	3.5 cfs	
Stream Classification:	Warm Water Sport Fish, non-public water supply	
Design Flow(s)	Monthly Maximum	0.065 MGD
	Annual Average	0.035 MGD
Significant Industrial Loading?	None.	
Operator at Proper Grade?	Facility is Basic with subclasses A3 – Recirculating Sand Filters, D – Disinfection, SS – Sanitary Sewage Collection System. Two operators are certified.	
Approved Pretreatment Program?	N/A	

Facility Description

The Village of Gratiot operates a wastewater treatment facility that serves a population of approximately 236 with no industrial contributors. Wastewater is conveyed by gravity sewer system to a lift station located near the intersection of STH 11 and Sheldon Street. The lift station pumps the sewage through 3520 feet of 4" force main to the first chamber of the solids settling tank. In the first chamber of the solids settling tank, solids settle to the bottom of the tank, while liquid passes through the transfer pipe between the two chambers of the tank. Further settling occurs in the second chamber. Decomposition of organic solids occurs in both chambers of the tank. After liquid passes through the solids tank, it passes into the wet well. One of the two self-priming, non-clog sewage pumps moves the liquid through the 4" diameter filter feed pipe to the sand filter. At the sand filter, the liquid is distributed through 3" diameter headers to 1 1/2" diameter perforated distribution pipes. Once the liquid passes through the sand filter, it is collected at the bottom of the filter by slotted collection pipes then goes to recirculation channel were some goes back to the wet well and some goes through UV disinfection chamber and to the outfall.

Solids from the two septic tanks at the wastewater treatment facility were formerly regulated as septage under ch. NR 113, Wis. Adm. Code. The proposed permit requires the permittee to manage solids as municipal biosolids, with regular monitoring for solids, metals, and nutrients according to the requirements of ch. NR 204, Wis. Adm. Code, for Domestic Sewage Sludge Management. Recent land application of solids on approved sites during the current permit term warrants the change in the regulatory requirement. For this permit term, Gratiot has applied for an individual phosphorus variance. This Department found the facility to be in substantial compliance with their current permit.

*Permit Modification effective 1/1/2021 following completion of the zinc schedule. Modifications are highlighted in grey below. The findings of the additional zinc monitoring showed no reasonable potential and therefore effluent limits are no longer required. The required acute WET testing in the original reissued permit is also removed because the removal of a zinc limit reduced the WET checklist points below a threshold for recommending acute WET testing.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)**
701	0.013 MGD (May 2013 – May 2018 Average)	24-hr flow proportional composite samples shall be collected from the inlet side of the first septic tank.
001	0.013 MGD (May 2013 – May 2018 Average)	24-Hr flow proportional composite sampler intake located in the effluent channel after the weir but before UV disinfection, prior to discharge to Wolf Creek. Grab samples collected after UV disinfection.
002	N/A	Anaerobically digested, Liquid, Class B. Representative sludge samples shall be collected from the septic tanks.
901	N/A	Solids from the septic tanks of the recirculating sand filter wastewater treatment plant.

1 Influent - Proposed Monitoring

Sample Point Number: 701- INFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD5, Total		mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	Weekly	24-Hr Flow Prop Comp	

Changes from Previous Permit:

Sample frequency reduced to weekly based on review of previous permit data.

Explanation of Limits and Monitoring Requirements

BOD_5 & Total Suspended Solids – Tracking of BOD_5 and Total Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and Standard Requirements section of the permit.

2 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD5, Total	Weekly Avg	45 mg/L	Weekly	24-Hr Flow Prop Comp	
BOD5, Total	Monthly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	Weekly	Grab	
pH Field	Daily Min	6.0 su	Weekly	Grab	
Fecal Coliform	Geometric Mean - Wkly	656 #/100 ml	Weekly	Grab	May through September
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	Weekly	Grab	May through September
Phosphorus, Total	Monthly Avg	7.7 mg/L	Weekly	24-Hr Flow Prop Comp	This is an interim limit. See phosphorus variance section and compliance schedule for more information.
Phosphorus, Total		lbs/day	Weekly	Calculate	Calculate the daily mass discharge of phosphorus in lbs/day on the same day phosphorus sampling occurs. Daily mass (lbs/day) = daily concentration (mg/L) x daily flow (MGD) x 8.34.
Zinc, Total Recoverable			Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	Jan 1, 2022 - Dec 31, 2022 monitor only.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Jan 1, 2022 - Dec 31, 2022 monitor only.

Changes from Previous Permit

A new geometric mean weekly fecal coliform limit has been added to this permit term. ~~Zinc limitations were added along with acute WET. These limits and WET testing may be removed prior to or after the public notice period pending the outcome of additional zinc sampling.~~ Total phosphorus mass calculations have been added. Sample frequency changed from 2/week to weekly for BOD, TSS and pH. Permit modification WI-0024139-10-1 removes the zinc limits, removes zinc mass reporting and reduces sampling frequency to quarterly. The permit modification also removes acute WET sampling requirements.

Explanation of Limits and Monitoring Requirements

Please refer to the Water Quality Based Effluent Limits memo prepared by John Dougherty, dated June 29, 2018, for the detailed calculations and explanation. Please refer to the Zinc Water Quality Based Effluent Limits memo prepared by Sarah Luck, dated August 26, 2020, for the detailed calculations and explanation for the permit modification.

Categorical Limits

BOD_5, Total Suspended Solids (TSS), pH, and Fecal Coliform – Standard municipal wastewater requirements for BOD_5, TSS, and Fecal Coliform are included based on NR 210 'Sewage Treatment Works' requirements for discharges to limited aquatic life streams. Chapter NR 102 'Water Quality Standards for Surface Waters' also specifies requirements for pH for fish and aquatic life streams.

Regulatory changes to s. NR 205.065, Wis. Adm. Code, became effective September 1, 2016 and require limits in this permit to be expressed as weekly average and monthly average limits whenever practicable. These changes are based on 40 CFR 122.45(d). Weekly average geometric mean limits have been added to fecal coliform limitations from the previous permit in order to comply with this regulation.

Water Quality Based Limits and WET Requirements

Phosphorus – Phosphorus requirements are based on the Phosphorus Rules that became effective December 1, 2010 as detailed in chs. NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards. The permittee has applied for an individual phosphorus variance in accordance with s. 283.15, Wis. Stats. Conditions for this variance include: maintaining phosphorus effluent concentrations below the interim limit of 7.7 mg/L; calculate, report and track phosphorus mass discharge; and implement a Pollution Minimization Program (PMP). Additional PMPs were added to the permit in addition to the approved PMP based on EPA comments during the variance process. For all PMP action items required, if a facility is unable to perform the action item, an explanation as to why not shall be included as part of the compliance schedule annual reports. See subsection 2.2.1.2 in the permit and the Phosphorus Variance and Phosphorus PMP compliance schedule at subsection below for details.

Ammonia – Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia. When the representative data is compared to the calculated limits, the data shows there is no reasonable potential for the permittee to exceed the calculated limits. Therefore, no ammonia limits are included in the proposed permit.

Chloride – When the representative data is compared to the calculated limits, the data shows there is no reasonable potential for the permittee to exceed the calculated limits. Therefore, no chloride limits are included in the proposed permit. However, the permittee shall monitor effluent chloride concentrations monthly in the 4th year of the permit term for use in permit reissuance.

Zinc, Total Recoverable: Additional zinc monitoring in accordance with the Zinc Schedule was completed. A comparison of the effluent data showed there was no reasonable potential and therefore zinc limits are no longer required. The permit modification removed zinc limits, removed required reporting of zinc mass discharge, and reduced sampling

for the remainder of the permit term to quarterly. The Zinc Schedule is complete, and no additional action is required. ~~Based on the data available to the Department there is reasonable potential for the discharge to exceed any of the calculated water quality based limits for zinc. These limits, effective January 1, 2021, along with the monthly monitoring effective upon reissuance have been included. A compliance schedule has been included to allow the permittee additional time to collect zinc data. 'See Potential Removal of Limitations' subsection in the Surface Water section of the permit for additional details about the potential removal of zinc limitations.~~

WET: Acute WET testing is removed with the removal of zinc limits per the August 26, 2020 Zinc WQBEL Addendum. A~~Whole effluent toxicity (WET) testing requirements are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised in August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html). Acute WET tests are scheduled in the rotating quarters listed in the permit. WET testing requirement were set beginning January 1, 2021 when zinc limitations become effective. See 'Potential Removal of Limitations' subsection in the permit for additional details regarding potential removal of WET testing.~~

3 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
002	B	Liquid	Fecal Coliform	Incorporation	Land Application	NA – previously regulated as NR 113 waste
Does sludge management demonstrate compliance? **Yes**						
Is additional sludge storage required? **No**						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **No** If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? **No**, **design flow is less than 5 MGD (0.035 MGD)** Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

Sample Point Number: 002- SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Jan 1, 2020 - Dec 31, 2020
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Jan 1, 2020 - Dec 31, 2020
Solids, Total		Percent	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	

Changes from Previous Permit:

Land application requirements have been added for this permit term. Solids from the two septic tanks at the wastewater treatment facility were formerly regulated as septage under ch. NR 113, Wis. Adm. Code. The proposed permit requires the permittee to manage solids as municipal biosolids, with regular monitoring for solids, metals, and nutrients according to the requirements of ch. NR 204, Wis. Adm. Code, for Domestic Sewage Sludge Management. Recent land application of solids on approved sites during the current permit term warrants the change in the regulatory requirement. Management of solids in accordance with ch. 204, Wis. Adm. Code is routine for facilities similar to Gratiot. Annual sampling required based on frequency of removal of solids from tanks in the past.

Explanation of Limits and Monitoring Requirements

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7), Wis. Adm. Code for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k), Wis. Adm. Code.

4 Schedules

4.1 Phosphorus Source Reduction Measures

As a condition of the variance to the water quality based effluent limitation for phosphorus granted in accordance with s. 283.15, Wis. Stats., the permittee shall perform the following actions.

Required Action	Due Date
Annual Phosphorus Progress Report: Submit an annual progress report that shall discuss which phosphorus pollutant minimization measures have been implemented during the period from January 1, 2019 to December 31, 2019. The report shall include an analysis of trends in weekly average, monthly average and annual total influent and effluent phosphorus concentrations and mass discharge of phosphorus based on phosphorus sampling and flow data. The report shall provide an update on the permittee's: (1) progress in implementing pollutant minimization measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, (2) status of evaluating feasible alternatives for meeting phosphorus WQBELs. Note that the monthly average interim limitation of 7.7 mg/L remains enforceable until new enforceable limits are established in the next permit reissuance. The first annual phosphorus progress report is to be submitted by the Date Due.	01/31/2020
Annual Phosphorus Progress Report #2: Submit a phosphorus progress report as defined above for the previous calendar year.	01/31/2021
Annual Phosphorus Progress Report #3: Submit a phosphorus progress report as defined above for the previous calendar year.	01/31/2022
Annual Phosphorus Progress Report #4: Submit a phosphorus progress report as defined above for the previous calendar year.	01/31/2023
Final Phosphorus Report: Submit a final report documenting the success in reducing phosphorus concentrations in the effluent, as well as the anticipated future reduction in phosphorus sources and phosphorus effluent concentrations. The report shall summarize phosphorus pollutant minimization activities that have been implemented during the current permit term and state which, if any, pollutant minimization activities from the approved pollutant minimization plan were not pursued and why. The report shall include an analysis of trends in monthly and annual total influent and effluent phosphorus concentrations based on phosphorus sampling during the current permit term. The permittee shall also re-evaluate all available compliance options for meeting the final phosphorus WQBELs. If the report concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an adaptive management plan. If the report concludes water quality trading will be used, the submittal shall include a Water Quality Trading Plan.	09/30/2023
Annual Phosphorus Reports After Permit Expiration: In the event that this permit is not reissued on time, the permittee shall continue to submit annual phosphorus progress reports each year	

covering pollutant minimization activities implemented and phosphorus concentration trends. The report is due no later than January 31 for the previous year's activities.	

Explanation of Schedules

This compliance schedule requires the permittee to implement a phosphorus minimization program (PMP). The permittee is required to investigate ways to reduce phosphorus entering and leaving the WWTF or other feasible alternatives with the goal of meeting WQBEL limits. Annual progress reports are required to document completion of the required items in the approved PMP plan.

~~4.2 Zinc Schedule~~

~~This schedule requires the permittee to comply with the following required actions related to discharge limits for zinc.~~

~~Required Action~~	~~Due Date~~
~~**Report on Effluent Discharges**: Submit a report on effluent discharges of zinc with conclusions regarding compliance.~~	~~01/30/2020~~
~~**Action Plan**: Submit and initiate an action plan for complying with the effluent limitation for zinc. If construction is required, include plans and specifications with the submittal.~~	~~06/30/2020~~
~~**Complete Actions**: Complete actions necessary to achieve compliance with the effluent limitations.~~	~~01/01/2021~~

~~Explanation of Schedules~~

~~This Department may provide a compliance schedule for water quality based zinc limits where the permittee cannot immediately achieve compliance. This compliance schedule requires the permittee to comply with the final water quality based zinc limit within 2 years of the proposed permit issuance date. See 'Potential Removal of Limits' subsection in the Surface Water Section of the permit for additional information.~~

Special Reporting Requirements

None

Attachments:

Substantial Compliance Determination
Water Quality Based Effluent Limits with Map(s)
Zinc Water Quality Based Effluent Limits Addendum
Public Notice
Variance documents

Proposed Expiration Date:

March 31, 2024

Justification of Any Waivers from Permit Application Requirements

No waivers were requested in the permit application.

Prepared By:
Jennifer Jerich – Wastewater Specialist

Date: 10/12/2020